

GenCore version 5.1.4\_p5\_4578  
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OM protein - protein search, using sw model

Run on: March 17, 2003, 07:20:40 ; Search time 13.4351 Seconds  
(without alignments)  
228.975 Million cell updates/sec

Title: US-09-787-082-7  
Perfect score: 188  
Sequence: 1 GLPVCKGKAGKACRLMYDCCCTGCRSGKCTRG 32

Scoring table: BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 283224 seqs, 96134422 residues  
Total number of hits satisfying chosen parameters: 283224

Minimum DB seq length: 0  
Maximum DB seq length: 2000000000  
Post-processing: Minimum Match 0%  
Maximum Match 100%  
Listing first 45 summaries

Database : PIR\_73:.\*  
1: pir1:.\*  
2: pir2:.\*  
3: pir3:.\*  
4: pir4:.\*

Pred. No. is the number of results predicted by chance to have a  
score greater than or equal to the score of the result being printed,  
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Match	Length	ID	Description
1	151	80.3	25	2 JH0700	omega-conotoxin MV
2	120	63.8	25	2 JH0701	omega-conotoxin MV
3	112.5	59.8	29	2 JH0699	omega-conotoxin MV
4	104	55.3	29	2 A58537	omega-conotoxin MV
5	97.5	51.9	26	2 C44379	omega-conotoxin SV
6	75.5	40.2	29	2 A43620	omega-conotoxin GV
7	75.5	40.2	29	2 B43620	omega-conotoxin GV
8	64	34.0	72	2 S39417	metallothionein 10
9	59.5	31.6	66	2 S58086	metallothionein 3
10	59.5	31.6	68	2 A46034	metallothionein 3
11	59.5	31.6	68	2 I67866	metallothionein 3
12	59	31.4	72	2 S39416	metallothionein 10
13	59	31.4	686	2 T25917	hypothetical prote
14	58	30.9	27	2 S19619	delta-conotoxin Tx
15	58	30.9	78	2 S12513	delta-conotoxin Tx
16	58	30.9	318	2 T05569	hypothetical prote
17	57	30.3	24	2 B44379	omega-conotoxin SV
18	57	30.3	64	2 A25775	metallothionein A
19	57	30.3	64	2 A33825	metallothionein A
20	57	30.3	65	2 A38739	metallothionein -
21	57	30.3	72	2 S39419	metallothionein 10
22	56.5	30.1	63	2 S08190	metallothionein 1
23	56.5	30.1	73	1 NTKN66	omega-conotoxin GV
24	56.5	30.1	1589	2 C44766	defective chorion-
25	56	29.8	761	2 E64449	hypothetical prote
26	56	29.8	1506	2 A96808	hypothetical prote
27	55.5	29.5	61	2 A27652	metallothionein 1A
28	55.5	29.5	61	2 S54334	metallothionein-2b
29	55.5	29.5	61	2 S54332	metallothionein-2D

30	55.5	29.5	61	2 S54333	metallothionein-2E
31	55.5	29.5	1895	2 T06609	disease resistance
32	55	29.3	60	1 SMH01A	metallothionein 1A
33	55	29.3	68	2 B46034	metallothionein 3
34	55	29.3	68	2 S44392	metallothionein 3
35	55	29.3	68	2 JC8521	metallothionein II
36	55	29.3	491	2 S05408	keratin, type II,
37	55	29.3	497	2 T27827	hypothetical prote
38	55	29.3	581	2 C96538	hypothetical prote
39	55	29.3	615	1 KFHU12	coagulation factor
40	55	29.3	813	2 T21192	hypothetical prote
41	55	29.3	860	1 QRHULD	LDL receptor precu
42	55	29.3	2664	2 T28626	variant-specific s
43	54.5	29.0	64	2 I56825	endogenous HIV-1 r
44	54.5	29.0	339	2 B81258	A/G-specific aden
45	54	28.7	1255	1 A24571	protein-tyrosine k

ALIGNMENTS

RESULT 1

JH0700

omega-conotoxin MVIIA [validated] - cone shell (Conus magus)

C:Species: Conus magus (magus cone)

C:Date: 17-Apr-1993 #sequence\_revision 17-Apr-1993 #text\_change 15-Sep-2000

C:Accession: JH0700; C60133; A34115

R:Hillyard, D.R.; Monje, V.D.; Mintz, I.M.; Bean, B.P.; Nadasdi, L.; Ramachandran, J

Neuron 9, 69-77, 1992

A:Title: A new conus peptide ligand for mammalian presynaptic Ca2+ channels.

A:Reference number: JH0699; MUID:92337922; PMID:1352986

A:Accession: JH0700

A:Status: nucleic acid sequence not shown

A:Molecule type: mRNA

A:Residues: 1-25 <HL>

R:Olivera, B.M.; Gray, W.R.; Zeikus, R.; McIntosh, J.M.; Varga, J.; Rivier, J.; de Sa

Science 230, 1338-1343, 1985

A:Title: Peptide neurotoxins from fish-hunting cone snails.

A:Reference number: A43620; MUID:86070213; PMID:4071055

A:Accession: C60133

A:Molecule type: protein

A:Residues: 1-25 <OLI>

R:Olivera, B.M.; Cruz, L.J.; de Santos, V.; LeCheminant, G.W.; Griffin, D.; Zeikus, F

Biochemistry 26, 2086-2090, 1987

A:Title: Neuronal calcium channel antagonists. Discrimination between calcium channel

A:Reference number: A34115; MUID:87299637; PMID:2441741

A:Contents: annotation

R:Nielsen, K.J.; Thomas, L.; Lewis, R.J.; Alewood, P.F.; Craik, D.J.

submitted to the Brookhaven Protein Data Bank, August 1996

A:Reference number: A67648; PDB:1MWI

A:Contents: annotation; conformation by (1)H-NMR, residues 1-25

R:Nielsen, K.J.; Thomas, L.; Lewis, R.J.; Alewood, P.F.; Craik, D.J.

J. Mol. Biol. 263, 297-310, 1996

A:Title: A consensus structure for omega-conotoxins with different selectivities for

A:Reference number: A58619; MUID:97070382; PMID:8913308

A:Contents: annotation; conformation by (1)H-NMR

R:Kohn, T.; Kim, J.I.; Kobayashi, K.; Kodera, Y.; Maeda, T.; Sato, K.

submitted to the Brookhaven Protein Data Bank, April 1995

A:Reference number: A66296; PDB:1OMG

A:Contents: annotation; conformation by (1)H-NMR, residues 1-25

R:Kohn, T.; Kim, J.I.; Kobayashi, K.; Kodera, Y.; Maeda, T.; Sato, K.

Biochemistry 34, 10256-10265, 1995

A:Title: Three-dimensional structure in solution of the calcium channel blocker omega

A:Reference number: A58627; MUID:95367555; PMID:7640281

A:Contents: annotation; conformation by (1)H-NMR

C:Superfamily: omega-conotoxin

C:Keywords: acetylcholine release inhibition; amidated carboxyl end; calcium channel

F;1-16,8-20,15-25/Disulfide bonds: #status predicted

F;25/Modified site: amidated carboxyl end (Cys) #status experimental

Query Match 80.3%; Score 151; DB 2; Length 25;

Best Local Similarity 100.0%; Pred. No. 2.8e-10;

Matches 25; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 5 CKGKGAKSRLMYDCTGSCRSKGC 29  
|||||  
Db 1 CKGKGAKSRLMYDCTGSCRSKGC 25

## RESULT 2

JH0701  
omega-conotoxin MWIIB - cone shell (Conus magus)  
C:Species: Conus magus (magus cone)  
C:Date: 17-Apr-1993 #sequence\_revision 17-Apr-1993 #text\_change 23-May-1997  
C:Accession: JH0701; B34115  
R:Hillyard, D.R.; Monje, V.D.; Mintz, I.M.; Bean, B.P.; Nadasdi, L.; Ramachandran, J.; M  
Neuron 9, 69-77, 1992  
A:Title: A new conus peptide ligand for mammalian presynaptic Ca2+ channels.  
A:Reference number: JH0699; MUID:92337922; PMID:1352986  
A:Accession: JH0701  
A>Status: nucleic acid sequence not shown  
A:Molecule type: mRNA  
A:Residues: 1-25 <HIL>  
R:Olivera, B.M.; Cruz, L.J.; de Santos, V.; LeCheminant, G.W.; Griffin, D.; Zeikus, R.;  
Biochemistry 26, 2086-2090, 1987  
A:Title: Neuronal calcium channel antagonists. Discrimination between calcium channel su  
A:Reference number: A34115; MUID:87299637; PMID:2441741  
A:Accession: B34115  
A:Molecule type: protein  
A:Residues: 1-25 <OLI>  
C:Superfamily: omega-conotoxin  
C:Keywords: acetylcholine release inhibition; amidated carboxyl end; calcium channel inh  
F:1-16,8-20,15-25/Disulfide bonds: #status predicted  
F:25/Modified site: amidated carboxyl end (Cys) #status predicted

Query Match 63.8%; Score 120; DB 2; Length 25;  
Best Local Similarity 76.0%; Pred. No. 6.8e-07;  
Matches 19; Conservative 0; Mismatches 6; Indels 0; Gaps 0;

QY 5 CKGKGAKSRLMYDCTGSCRSKGC 29  
|||||  
Db 1 CKGKGASCHRTSYDCTGSCNRKGC 25

## RESULT 3

JH0699  
omega-conotoxin MWIIC precursor [validated] - cone shell (Conus magus) (fragment)  
C:Species: Conus magus (magus cone)  
C:Date: 17-Apr-1993 #sequence\_revision 11-Apr-1997 #text\_change 15-Sep-2000  
C:Accession: JH0699; PC2380  
R:Hillyard, D.R.; Monje, V.D.; Mintz, I.M.; Bean, B.P.; Nadasdi, L.; Ramachandran, J.; M  
Neuron 9, 69-77, 1992  
A:Title: A new conus peptide ligand for mammalian presynaptic Ca2+ channels.  
A:Reference number: JH0699; MUID:92337922; PMID:1352986  
A:Accession: JH0699  
A:Molecule type: mRNA  
A:Residues: 1-29 <HIL>  
A:Cross-references: GB:S40826; NID:Q252126; PIDN:AAB22674.1; PID:Q252127  
R:Nemoto, N.; Kubo, S.; Yoshida, T.; Chino, N.; Kimura, T.; Sakakibara, S.; Kyogoku, Y.;  
Biochem. Biophys. Res. Commun. 207, 695-700, 1995  
A:Title: Solution structure of omega-conotoxin MWIIC determined by NMR.  
A:Reference number: PC2380; MUID:95169113; PMID:7864862  
A:Accession: PC2380  
A:Molecule type: protein  
A:Residues: 3-28 <NEM>  
R:Farr-Jones, S.; Basus, V.J.  
submitted to the Brookhaven Protein Data Bank, December 1994  
A:Reference number: A66297; PDB:1OMN  
A:Contents: annotation; conformation by (1)H-NMR, residues 3-28  
R:Monje, J.S.; Miljanich, G.P.; Nadasdi, L.; Ramachandran, J.; Basus, V.J.  
J. Mol. Biol. 248, 106-124, 1995  
A:Title: Solution structure of omega-conotoxin MWIIC, a high affinity of P-type calcium  
A:Reference number: A58582; MUID:95248539; PMID:7731037  
A:Contents: annotation; conformation by (1)H-NMR  
C:Superfamily: omega-conotoxin  
C:Keywords: acetylcholine release inhibition; amidated carboxyl end; calcium channel inh

F:3-28/Product: omega-conotoxin MWIIC #status experimental <MAT>  
F:3-18,10-22,17-28/Disulfide bonds: #status experimental  
F:28/Modified site: amidated carboxyl end (Cys) (amide in mature form from following

Query Match 59.8%; Score 112.5; DB 2; Length 29;  
Best Local Similarity 73.1%; Pred. No. 5e-06;  
Matches 19; Conservative 2; Mismatches 4; Indels 1; Gaps 1;

QY 5 CKGKGAKSRLMYDCTGSC-RSGKGC 29  
|||||  
Db 3 CKGKGAPCRKTMVDCSGSGRRGKC 28

## RESULT 4

A58537  
omega-conotoxin MWIID precursor - cone shell (Conus magus) (fragment)  
C:Species: Conus magus (magus cone)  
C:Date: 27-Mar-1997 #sequence\_revision 11-Apr-1997 #text\_change 16-Jul-1999  
C:Accession: A58537  
R:Monje, V.D.; Haack, J.A.; Naisbitt, S.R.; Miljanich, G.; Ramachandran, J.; Nadasdi,  
Neuropharmacology 32, 1141-1149, 1993  
A:Title: A new Conus peptide ligand for Ca channel subtypes.  
A:Reference number: A58537; MUID:94150815; PMID:8107968  
A:Accession: A58537  
A:Molecule type: mRNA  
A:Residues: 1-29 <MON>  
A:Cross-references: GB:S69322; NID:G545399; PIDN:AAB29902.1; PID:G545400  
A:Note: the predicted peptide was chemically synthesized and alternative disulfide bo  
C:Superfamily: omega-conotoxin  
C:Keywords: toxin; venom  
F:4-29/Product: omega-conotoxin MWIID #status predicted <MAT>  
F:4-19,11-23,18-28/Disulfide bonds: #status predicted

Query Match 55.3%; Score 104; DB 2; Length 29;  
Best Local Similarity 56.0%; Pred. No. 4.2e-05;  
Matches 14; Conservative 6; Mismatches 5; Indels 0; Gaps 0;

QY 5 CKGKGAKSRLMYDCTGSCRSKGC 29  
|||||  
Db 4 CQGRGASCRKTMVDCSGSCNRGRC 28

## RESULT 5

C44379  
omega-conotoxin SVIB [validated] - cone shell (Conus striatus)  
N:Alternate names: SNX-183  
C:Species: Conus striatus (striated cone)  
C:Date: 31-Dec-1993 #sequence\_revision 31-Dec-1993 #text\_change 15-Sep-2000  
C:Accession: C44379  
R:Ramilo, C.A.; Zafaralla, G.C.; Nadasdi, L.; Hammerland, L.G.; Yoshikami, D.; Gray,  
Biochemistry 31, 9919-9926, 1992  
A:Title: Novel alpha- and omega-conotoxins from Conus striatus venom.  
A:Reference number: A44379; MUID:93003172; PMID:1390774  
A:Accession: C44379  
A:Molecule type: protein  
A:Residues: 1-26 <RAM>  
A:Cross-references: CAS:143306-19-8  
A:Experimental source: venom  
A:Note: sequence extracted from NCBI backbone (NCBIP:116002); structure confirmed by  
R:Nielsen, K.J.; Thomas, L.; Lewis, R.J.; Alewood, P.F.; Craik, D.J.  
submitted to the Brookhaven Protein Data Bank, August 1996  
A:Reference number: A67649; PDB:1MWJ  
A:Contents: annotation; conformation by (1)H-NMR  
R:Nielsen, K.J.; Thomas, L.; Lewis, R.J.; Alewood, P.F.; Craik, D.J.  
J. Mol. Biol. 263, 297-310, 1996  
A:Title: A consensus structure for omega-conotoxins with different selectivities for  
A:Reference number: A58619; MUID:97070382; PMID:8913308  
A:Contents: annotation; conformation by (1)H-NMR  
C:Comment: This omega-conotoxin blocks presynaptic calcium channels.  
C:Superfamily: omega-conotoxin  
C:Keywords: acetylcholine release inhibition; amidated carboxyl end; calcium channel  
F:1-16,8-20,15-26/Disulfide bonds: #status predicted  
F:26/Modified site: amidated carboxyl end (Cys) #status experimental

```
Query Match      51.9%; Score 97.5; DB 2; Length 26;
Best Local Similarity 65.4%; Pred. No. 0.0002;
Matches 17; Conservative 2; Mismatches 6; Indels 1; Gaps 1;

QY 5 CKGKGAKSRLMYDCTGSC-RSGKC 29
   || || | : ||||| |||||
Db 1 CKLKGQSCRKTSYDCCSGSGRSGKC 26

RESULT 6
A43620
omega-conotoxin GVIIA - cone shell (Conus geographus)
N:Alternate names: shaker peptide GVIIA
C:Species: Conus geographus (geography cone)
C:Date: 11-Dec-1992 #sequence_revision 11-Dec-1992 #text_change 23-May-1997
C:Accession: A43620
R:Olivera, B.M.; Gray, W.R.; Zeikus, R.; McIntosh, J.M.; Varga, J.; Rivier, J.; de Santis
Science 230, 1338-1343, 1985
A:Title: Peptide neurotoxins from fish-hunting cone snails.
A:Reference number: A43620; MUID:86070213; PMID:4071055
A:Accession: A43620
A:Molecule type: Protein
A:Residues: 1-29 <OLI>
C:Superfamily: omega-conotoxin
C:Keywords: acetylcholine release inhibition; calcium channel inhibitor; hydroxyproline;
F:1-16,8-19,15-26/Disulfide bonds: #status predicted
F:4,7/Modified site: 4-hydroxyproline (Pro) #status experimental

Query Match      40.2%; Score 75.5; DB 2; Length 29;
Best Local Similarity 58.6%; Pred. No. 0.055;
Matches 17; Conservative 0; Mismatches 9; Indels 3; Gaps 2;

QY 5 CKGKGAKSRLMYDCTGSC--RSGKC 31
   || | ||| | |||| | || |
Db 1 CKSPGTPCSRGMRDCT-SCLSYKNCR 28

RESULT 7
B43620
omega-conotoxin GVIIA - cone shell (Conus geographus)
N:Alternate names: shaker peptide GVIIA
C:Species: Conus geographus (geography cone)
C:Date: 11-Dec-1992 #sequence_revision 11-Dec-1992 #text_change 23-May-1997
C:Accession: B43620
R:Olivera, B.M.; Gray, W.R.; Zeikus, R.; McIntosh, J.M.; Varga, J.; Rivier, J.; de Santis
Science 230, 1338-1343, 1985
A:Title: Peptide neurotoxins from fish-hunting cone snails.
A:Reference number: A43620; MUID:86070213; PMID:4071055
A:Accession: B43620
A:Molecule type: Protein
A:Residues: 1-29 <OLI>
C:Superfamily: omega-conotoxin
C:Keywords: acetylcholine release inhibition; calcium channel inhibitor; hydroxyproline;
F:1-16,8-19,15-26/Disulfide bonds: #status predicted
F:4,7/Modified site: 4-hydroxyproline (Pro) #status experimental

Query Match      40.2%; Score 75.5; DB 2; Length 29;
Best Local Similarity 58.6%; Pred. No. 0.055;
Matches 17; Conservative 0; Mismatches 9; Indels 3; Gaps 2;

QY 5 CKGKGAKSRLMYDCTGSC--RSGKC 31
   || | ||| | |||| | || |
Db 1 CKSPGTPCSRGMRDCT-SCLSYKNCR 28

RESULT 8
S39417
metallothionein 10-II - blue mussel
C:Species: Mytilus edulis (blue mussel)
C:Date: 13-Jan-1995 #sequence_revision 13-Jan-1995 #text_change 17-Mar-1999
C:Accession: S39417
R:Mackay, E.A.; Overnell, J.; Dunbar, B.; Davidson, I.; Hunziker, P.E.; Kaegi, J.H.R.; H
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Eur. J. Biochem. 218, 183-194, 1993
A:Title: Complete amino acid sequences of five dimeric and four monomeric forms of me
A:Reference number: S39416; MUID:94062828; PMID:8243463
A:Accession: S39417
A:Molecule type: Protein
A:Residues: 1-72 <MAC>
C:Superfamily: metallothionein
C:Keywords: metal binding

Query Match      34.0%; Score 64; DB 2; Length 72;
Best Local Similarity 50.0%; Pred. No. 1.8; Mismatches 11; Indels 2; Gaps 2;
Matches 14; Conservative 1; Mismatches 11; Indels 2; Gaps 2;

QY 5 CKGKGAKSRLMYDC-CTGSCRSKG-CT 30
   | | ||| | |||| | || |
Db 31 CSGADCKCSGCKVVKCKSGCECGKCT 58

RESULT 9
S58086
metallothionein 3 - rat
N:Alternate names: neurotrophic growth inhibitory factor
C:Species: Rattus norvegicus (Norway rat)
C:Date: 13-Jan-1996 #sequence_revision 19-Apr-1996 #text_change 20-Aug-1999
C:Accession: S58086; I52636
R:Amoureux, M.C.; Rethsaut, E.; Wurch, T.; Colpaert, F.C.; Pauwels, P.J.
submitted to the EMBL Data Library, July 1995
A:Reference number: S58084
A:Accession: S58086
A:Status: Preliminary
A:Molecule type: mRNA
A:Residues: 1-66 <AMO>
R:Cross-references: EMBL:X89603; NID:g908880; PIDN:CAA61762.1; PID:g908881
R:Kobayashi, H.; Uchida, Y.; Ihara, Y.; Nakajima, K.; Kohsaka, S.; Miyatake, T.; Tsui
Brain Res. Mol. Brain Res. 19, 188-194, 1993
A:Title: Molecular cloning of rat growth inhibitory factor cDNA and the expression in
A:Reference number: I52636; MUID:94018480; PMID:8412560
A:Accession: I52636
A:Status: Preliminary; translated from GB/EMBL/DBDJ
A:Molecule type: mRNA
A:Residues: 1-66 <KOB>
R:Cross-references: GB:S65838; NID:g425381; PIDN:AAB28366.1; PID:g425382
C:Superfamily: metallothionein
C:Keywords: acetylated amino end; chelation; metal binding; metal-thiolate cluster
F:1/Modified site: acetylated amino end (Met) #status predicted
F:6,8,14,16,20,22,25,27,30/Binding site: transition metal ions (Cys) #status predicted
F:34,35,37,38,42,45,49,51,62,64,65/Binding site: transition metal ions (Cys) #status

Query Match      31.6%; Score 59.5; DB 2; Length 66;
Best Local Similarity 41.4%; Pred. No. 5.2;
Matches 12; Conservative 4; Mismatches 10; Indels 3; Gaps 2;

QY 5 CKGKGAKSRLMYDCTGSCRSKG--KCTR 31
   || || || : || : | : | :
Db 20 CKCKGCKCTNCKKSCCS-CCPAGCEKCAK 47

RESULT 10
A46034
metallothionein 3, brain-specific - mouse
N:Alternate names: neurotrophic growth inhibitory factor
C:Species: Mus musculus (house mouse)
C:Date: 21-Sep-1993 #sequence_revision 18-Nov-1994 #text_change 20-Aug-1999
C:Accession: A46034
R:Palmiter, R.D.; Findley, S.D.; Whitmore, T.E.; Durnam, D.M.
Proc. Natl. Acad. Sci. U.S.A. 89, 6333-6337, 1992
A:Title: MT-III, a brain-specific member of the metallothionein gene family.
A:Reference number: A46034; MUID:92335292; PMID:1631128
A:Accession: A46034
A:Status: Preliminary
A:Molecule type: DNA
A:Residues: 1-68 <PAL>
R:Cross-references: GB:M93310; NID:g199133; PIDN:AAA39529.1; PID:g199134
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A;Title: Mollusc-specific toxins from the venom of Conus textile neovicarius.

A;Reference number: S19553; MUID:92104183; PMID:1761058

A;Accession: S19553

A;Molecule type: protein

A;Residues: 52-78 <FAI>

C;Superfamily: omega-conotoxin

C;Keywords: neurotoxin; sodium channel inhibitor; venom

F;1-22/Domain: signal sequence #status predicted <SIG>

F;23-51/Domain: propeptide #status predicted <PRO>

F;52-78/Product: delta-conotoxin TxVIA #status experimental <MAT>

F;53-68,60-72,67-77/Disulfide bonds: #status predicted

Query Match

30.9%; Score 58; DB 2; Length 78;

Best Local Similarity 42.3%; Pred. No. 8.4;

Matches 11; Conservative 2; Mismatches 13; Indels 0; Gaps 0;

QY 5 CKGKGAKCSRLMYDCCCTGCRSGKCT 30

|| | | | | : || | | ||

Db 53 CKSGEMCNLLDONCCDGYCIVLVCT 78

Search completed: March 17, 2003, 07:27:26

Job time : 14.4351 secs

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